

Appl. No. 10/706,880
Response dated May 8, 2006
Reply to Office Action of February 8, 2006

Amendments to the Specification

Please replace paragraph [0023] on Page 6 of the specification as originally filed with the replacement paragraph set out below.

[0023] In preferred embodiments the stabilized support is made by a method that comprises combining the modifying agent or a precursor thereof with an alumina material or a precursor of an alumina material in an amount sufficient to deter disintegration or structural deterioration of the alumina material during the partial ~~oxidization~~ oxidation process. In certain embodiments the combined modifying agent and alumina material form a solid solution between the modifying agent and at least a portion of the support material. As a result, a modifier-support intermediate structure is obtained. In certain preferred embodiments the stabilized support comprises, at least in part, a crystalline structure that is capable of resisting a phase change at temperatures up to at least 1,200°C. The modifying agent may comprise, for example, La, Al, Sm, Pr, Ce, Eu, Yb, Si, Mg, Co, Ca, Mn, Fe or Zr.

Please replace paragraphs [0040]-[0042] on Pages 9-10 of the specification as originally filed with the replacement paragraphs set out below.

[0040] The present invention further presents a method of making a syngas catalyst support wherein said method comprises depositing a compound or precursor of a modifying agent onto an alumina precursor; calcining the deposited alumina precursor at ~~temperatures~~ a temperature greater than 600°C, preferably between 800°C and 1400°C, more preferably between 900°C and 1300°C to form a modified alumina.

[0041] The present invention further presents a method of making a Fischer-Tropsch catalyst support wherein said method comprises depositing a compound or precursor of a modifying agent onto an alumina precursor; calcining the deposited alumina precursor at ~~temperatures~~ a temperature between 300°C and 1000°C, and more preferably at a temperature between 400°C and 800°C to form a modified alumina.

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[0042] The alumina precursor can comprise one or more alumina phases such as, but not limited to, gamma, delta, kappa, theta, alpha that are known in the art. The alumina precursor can also comprise ~~Boehmite~~ boehmite alumina or pseudoboehmite. An alumina precursor comprising mainly γ -alumina is preferred. It should be understood that the alumina precursor could be pre-treated prior to deposition of the modifying agent. The pre-treatment could be heating, spraydrying (to e.g., adjust particle sizes), dehydrating, drying, steaming or calcining. Steaming the alumina precursor can be done at conditions sufficient to transform the alumina precursor into a hydrated ~~from~~ form of aluminum oxide, such as boehmite or pseudoboehmite.

Please replace paragraph [0053] on Page 13 of the specification as originally filed with the replacement paragraph set out below.

[0053] The compound or precursor of the active metal can be in the form of salt, acid, oxide, hydroxide, oxyhydroxide, carbide, and the like. Preferably the compound or precursor of the active metal is a salt. The active metal comprises one element selected from the group consisting of Group VIII metals, rhenium, tungsten, zirconium, their corresponding oxides or ions, and any combinations thereof. Preferably the active metal for syngas catalyst comprises either rhodium, iridium, ruthenium, their corresponding oxides or ions, or any combinations thereof. Preferably the compound or precursor of the active metal is a nitrate or a chloride salt, as for example only $\text{Rh}(\text{NO}_3)_3$ or RhCl_3 . Preferably the active metal for FT catalyst comprises either cobalt, ruthenium, iron, nickel, their corresponding oxides or ions, or any combinations thereof. It should be understood that more than one active metal or more than one compound or precursor of an active metal can be used. When two active metals are used in the syngas catalyst, it is preferred that at least rhodium is selected as one metal, that the other metal is selected from the active metal list above for syngas catalyst, and that the loading of both metals is such so as to form a rhodium alloy.

Please replace paragraph [0059] on Page 14 of the specification as originally filed with

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the replacement paragraph set out below.

[0059] The syngas catalyst compositions according to the present invention comprise an active metal selected from the group consisting of Group VIII metals, rhenium, tungsten, zirconium, their corresponding oxides or ions, and any combinations thereof, preferably a group VIII metal or rhenium, more preferably rhodium, iridium, ruthenium, rhenium, or combinations thereof.

Please replace Line 10 on Page 23 of the specification as originally filed with the replacement Line set out below.

EXAMPLE 8: 3.3%Rh/1.9%Sm on Mg modified alumina